Pneumococcal pericarditis presenting as an out of hospital cardiopulmonary arrest

A R Wass, P Mann, J I Wilson

Abstract
Serious complications of pneumococcal pneumonia have become uncommon with effective antibiotic treatment. Purulent pericarditis is a rare though well described complication of untreated pneumococcal sepsis. A case of untreated pneumococcal pneumonia complicated by purulent pericarditis is described. This presented as an out of hospital asystolic cardiopulmonary arrest.

Keywords: Streptococcus pneumoniae, untreated pneumonia; purulent pericarditis, out of hospital cardiopulmonary arrest

Case report
A 29 year old man presented with an out of hospital asystolic cardiopulmonary arrest. Though previously well, he had suffered for two weeks with a "flu-like" illness. Musculoskeletal chest pain had been diagnosed four days before presentation, when he developed pleuritic symptoms. He had complained of
progressive dyspnoea, orthopnoea, and ankle oedema in the 24 hours preceding presentation.

The patient then collapsed while seeking further medical attention. Effective bystander basic life support was started immediately. On arrival, the paramedic ambulance crew documented asystole and advanced life support was begun with intubation, ventilation, and administration of adrenaline and atropine through the endotracheal tube. Transfer to hospital was within 15 minutes of the collapse.

On arrival at hospital asystole persisted. Adrenaline given through a central vein resulted in the return of a pulse (rate 120) and blood pressure (90/60 mm Hg), but no spontaneous respiratory effort. Subsequent examination revealed a loud pericardial friction rub, gallop rhythm, elevated venous pressure, bilateral coarse respiratory crackles, ankle oedema to mid calf, and hepatomegaly. An electrocardiogram (ECG) showed tachycardia, widespread ST elevation, and non-specific T wave changes. A chest x ray showed cardiomegaly and bilateral pulmonary infiltrates (fig 1). On routine blood testing there was a neutrophil leucocytosis (42 x 10⁹/litre) and deranged renal function (creatinine 386 µmol/litre, urea 28.6 mmol/litre, potassium 5.4 mmol/litre).

The patient was admitted to intensive care for ventilatory and inotropic support. Echocardiography showed moderate left ventricular function and a pericardial effusion, with right atrial collapse and early tamponade. Pericardiocentesis yielded over 100 ml of turbid aspirate without improving systolic function. Broad spectrum antibiotics were given. Aspirate microscopy showed frequent Gram positive diplococci, later confirmed as *Streptococcus pneumoniae*. Despite aggressive antibiotics and inotropic support the patient became anuric, hyperkalaemic (potassium 6.6 mmol/litre), and developed signs of disseminated intravascular coagulation (DIC). After transfer to the regional renal unit and successful resuscitation from a second cardiopulmonary arrest, reassessment confirmed DIC and systemic sepsis, with deteriorating renal and cardiac function.

In spite of maximum inotropic support, haemofiltration, and the insertion of an intra-aortic balloon pump, the patient suffered a third cardiac arrest from which he could not be resuscitated. A necropsy examination confirmed overwhelming pneumococcal sepsis arising from a left lower lobe pneumonia complicated by purulent pericarditis.

**Discussion**

Pneumococcal pneumonia is a common cause of morbidity and mortality in the community. *Streptococcus pneumoniae* bacteraemia is a serious disease with an overall mortality of 19%. Purulent pericarditis is a rare though well described life threatening complication of untreated pneumococcal infection. In a review of 113 cases of pneumococcal pericarditis, pneumonia (93.1%) or pneumonia with an accompanying empyema (66.6%) were the commonest underlying infections. Cases of direct spread from endocarditis or haematogenous spread from meningitis, subcutaneous abscesses, otitis media, mastoiditis, septic arthritis, and appendicitis have also been reported.

The overall incidence of purulent pericarditis has fallen by a factor of three since the advent of antibiotics in 1943. Before 1943 purulent pericarditis was predominantly a disease of children and young adults (median age 20 years), associated with severe bacterial infection. Sixty four per cent of cases resulted from direct extension of pleuropulmonary disease. Pneumococcus was the commonest organism, accounting for 51% of cases. Since 1943 purulent pericarditis has occurred in older patients (median age 49 years) who have underlying pericardial disease, chronic disease, malignancy, immunosuppression, or after thoracic surgery. Contiguous spread from pleuropulmonary disease currently accounts for 20% of cases, and overall just 9% result from pneumococcal infection. The reduced incidence of pneumococcal pericarditis relates to the susceptibility of the pneumococcus to antibiotics, the prevalent use of antibiotics in respiratory tract infections, and the increased use of pneumococcal vaccine.

Diagnosing pneumococcal pericarditis continues to present problems despite the advances of modern medicine, reflected by the fact that only 10–20% of cases are correctly diagnosed antemortem. The diagnosis is rarely considered if a focus of infection has already been identified within the chest. These patients are acutely unwell; however, the most reliable signs are pyrexia and tachycardia, which are also the least specific. Signs of right heart failure, pulsus paradoxus, or a pericardial rub are more specific though frequently absent.

The definitive diagnosis of pneumococcal pericarditis is from culture of pericardial aspirate. Blood culture is positive in only 30% of patients but is helpful in these cases. Neutrophil leucocytosis in excess of 20 x 10⁹/litre is usual. The ECG may be diagnostic of pericarditis with generalised ST segment elevation without reciprocal changes (helping

**Figure 1** Chest x ray showing cardiomegaly and bilateral pulmonary infiltrates.
Conversion disorder presenting as a head injury

F E Poyner, P E Pritty

Abstract
A case of a conversion disorder which presented as a head injury is described. This is a rare problem and by definition a diagnosis of exclusion.

(J Accid Emerg Med 1997;14:263–264)

Keywords: conversion disorder; head injury

Case report
A 35 year old female presented to the accident and emergency (A&E) department after a car crash. She complained of an unsteady gait and speech difficulties with a skull x-ray. This showed no abnormality but the radiographer was concerned by

CONCLUSIONS
Purulent pericarditis is a rare complication of untreated pneumococcal sepsis. It is an acute disease with a fulminant course which often remains undiagnosed during life. The potential for a good outcome depends upon awareness and a high index of suspicion, allowing early diagnosis and aggressive treatment.